

METHOD AND DEVICE FOR PRODUCING HYDROGEN

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Abstract

PURPOSE: To simultaneously promote a reaction and control the temp. and to excellently follow a change in load in the production of hydrogen by steam- reforming hydrocarbons by using a non-equilibrium reactor by the separation of hydrogen and combining the partial oxidation of a raw gas to be reformed.

CONSTITUTION: The raw gas 24 to be reformed consisting essentially of hydrocarbons is supplied to the reaction tube 12 of a fuel reformer 10 packed with a reforming catalyst 18, the catalyst bed 18 is heated 14 from outside the reaction tube 12, oxygen or air 26 is added to the raw gas 24 at the inlet of the bed 18, and the bed 18 is internally heated by the partial oxidation of the raw hydrocarbons to produce the hydrogen-rich reformed gas G. The following means are added in this steam-reforming method. Namely, at least a part of the reaction tube 12 is formed with a hydrogen passable membrane 16, the generated hydrogen is passed through the membrane 16 and separated from the system, and the amt. of oxygen or air to be added for the partial oxidation is controlled (flow control means 28) to optimize the reaction temp. of the bed 18.

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